

1 Patent claims

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- 3 1. A device for monitoring a gas volume in a unit (12) filled  
4 with a liquid, the unit (12) having an inflow line (13)  
5 with at least one expansion vessel (1a) and the device  
6 having at least one buoyant body (5) floating in the  
7 liquid, characterized in that the floating buoyant body (5)  
8 is connected to a shaft (11) that is fixed in place in the  
9 expansion vessel (1a) and is mounted rotatably with respect  
10 to the shaft (11).
- 11
- 12 2. The device as claimed in claim 1, characterized in that a  
13 connecting element (4a) connects the shaft (11) to the  
14 buoyant body (5) kept at a distance from the latter.
- 15
- 16 3. The device as claimed in either of claims 1 and 2,  
17 characterized in that a fixed-in-place force transducer (7)  
18 detects the torque on the connection (4a) at a  
19 predetermined length (a).
- 20
- 21 4. The device as claimed in one of claims 1 to 3,  
22 characterized in that, if a predetermined torque is  
23 exceeded by a torque measured in the force transducer (7),  
24 a processing device generates a warning message.
- 25
- 26 5. The device as claimed in one of claims 1 to 4,  
27 characterized in that a number of buoyant bodies (5) are  
28 arranged at fixed vertical levels (9), respectively offset  
29 from one another with respect to the shafts (11) arranged  
30 parallel to one another, the respective buoyant bodies (5)  
31 being of different sizes and/or densities.
- 32

- 1   6. The device as claimed in either of claims 1 and 2,  
2   characterized in that a fixed-in-place angulometer detects  
3   the angle between the connecting element (4a) and a  
4   horizontal transverse axis of the shaft (11).
- 5
- 6   7. The device as claimed in claim 6, characterized in that, if  
7   a predetermined angle of the connecting element (4a) is  
8   exceeded, a processing device generates a warning message.
- 9
- 10  8. The device as claimed in one of claims 1 to 7,  
11   characterized in that the buoyant body (5) has additional  
12   capacitive and/or inductive and/or optical elements, a  
13   processing device detecting the electromagnetic and/or  
14   electrical and/or optical signals generated by them.
- 15
- 16  9. A method for monitoring a gas volume in a unit (12) filled  
17   with a liquid, the unit (12) having an inflow line (13)  
18   with at least one expansion vessel (1a) and a buoyant body  
19   (5) that floats in the liquid being located in the  
20   expansion vessel (1a) and the buoyant body (5) being  
21   connected in the expansion vessel (1a) to a fixed-in-place  
22   shaft (11) and mounted rotatably, the rotating movement of  
23   the floating body (5) with respect to the shaft (11) being  
24   detected.
- 25
- 26  10. The method as claimed in claim 9, characterized in that the  
27   shaft (11) is fixed at a fixed vertical level (9) within  
28   the expansion vessel (1a) on the basis of a maximum gas  
29   volume to be detected in relation to the inner side of the  
30   upper covering (10a) of the expansion vessel (1a)
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1       and the shaft (11) is fixed at fixed vertical levels (9) by  
2       means of a fixing device.